



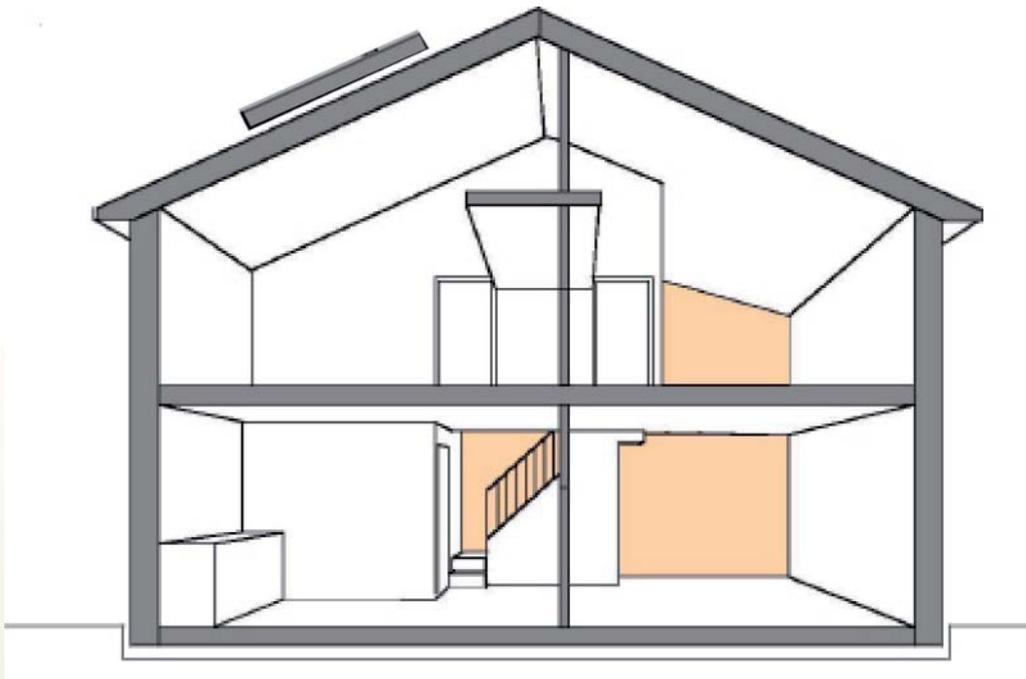
**Horsham greenhomes - Abbey Walk, Ravenscroft, Storrington**  
**Twelve 2,3 & 4 bedroom family houses**  
**All built to full Lifetime Homes standards; 1 wheelchair standard**  
**Completed: August 2009**

To address the need for genuine sustainability in its new housing, Greenoak has developed a new model of housing – greenhomes – which take a ‘sustainability by stealth approach’ to the creation of useful assets, which are truly sustainable in social, economic and environmental terms. Abbey Walk is the third scheme to be completed in an ongoing development programme, which aims to:

- provide genuine ‘liveability’ with homes people like, that are easy to live in and that can be used flexibly over their life
- **built-in not bolt-on performance** – a passive approach to sustainability, prioritising the holistic design of the building fabric to reduce environmental impact and carbon use
- **reduce waste** and minimise environmental impact over the buildings’ **lifetime**
- incorporate **appropriate renewable technology** - in this case as the energy required for hot water is greater than for space heating, a solar thermal system has been installed rather than additional insulation
- meet ‘best practice’ standards as far as possible in all areas and exceed scope of Code for Sustainable Homes level 4 in specification
- be affordable to run and manage and seek to achieve best value over lifetime
- evolve and continuously improve as a replicable model for Greenoak, which others can also adopt.

Greenoak engaged an expert design team, led by Jon Broome Architects to develop and deliver this model of high performance, low environmental impact housing. Designed to achieve the highest performance within normal funding constraints, whilst being ‘**future-proofed**’ in allowing for upgrade paths in terms of energy supply and adaptability to differing needs without wasteful re-building.

# Horsham greenhomes—Environmental features



## Reduce energy use, pollution & fuel bills

- High levels of insulation
  - roof :  $U=0.10\text{W/m}^2\text{K}$
  - walls :  $U=0.16\text{W/m}^2\text{K}$
  - floor:  $U=0.10\text{W/m}^2\text{K}$
- Passiv Haus standard triple glazed timber windows  
 $U=0.8\text{W/m}^2\text{K}$
- Airtight construction
  - Tested at 2 - 3 ach on completion
- 2.6m<sup>2</sup> Solar Thermal System
- 250l Thermal store
- Avoid cold bridges with battens & insulation
- Whole house ventilation system with highly efficient heat recovery
- Draught lobby to main entrance
- No cold roofspace
- Plenty of daylight from large windows
- 100% dedicated low energy lighting

## Sustainable specification

- Ozone friendly materials
- Low NOx boilers
- PVC free specification:  
windows, paints, rainwater goods, waste pipes, wiring, floor coverings
- Sustainably sourced timber
- Avoidance of energy intensive materials
- Clad in locally sourced Chesnut and carbon absorbing lime render

## Adaptable

- Full lifetime homes standard
- No load bearing interior partitions
- Services ducted for upgrading and alteration

## Reduce water use & bills

- Low water use dual flush toilet (4/2.6l)
- Efficient plumbing layout
- Reduced flow fittings
- Low water capacity bath
- Water butt in garden

## Reduce Waste

- Timber frame construction
- Construction waste management scheme  
BRE Smart Waste
- Recycling bins provided
- Many building materials reusable at end of building life
- Screw pile foundation result in no muck away
- Demolition waste, processed and reused on site

## Reduce Maintenance

- Aluminium exterior to timber windows
- Self coloured render
- No painting as natural finish to timber

## Secure

- Secured by Design standards

## Ecology

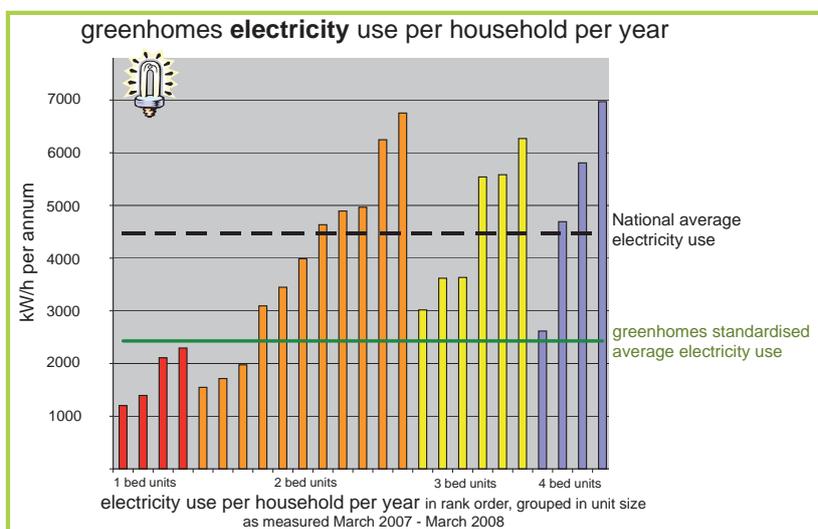
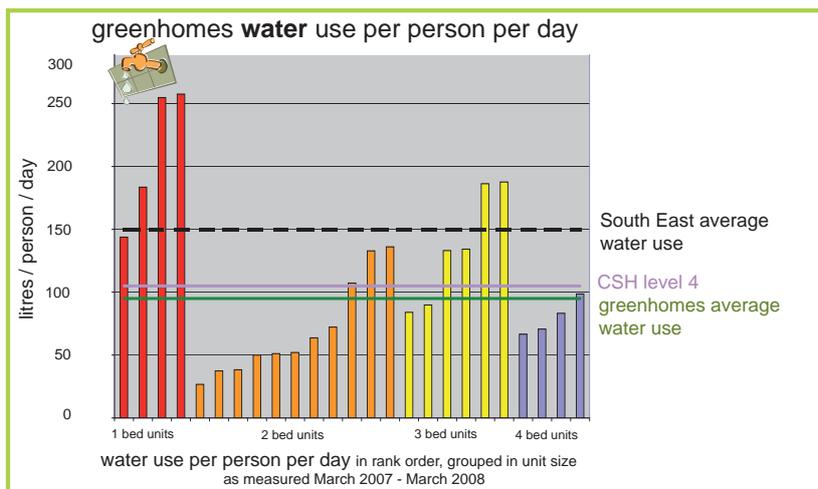
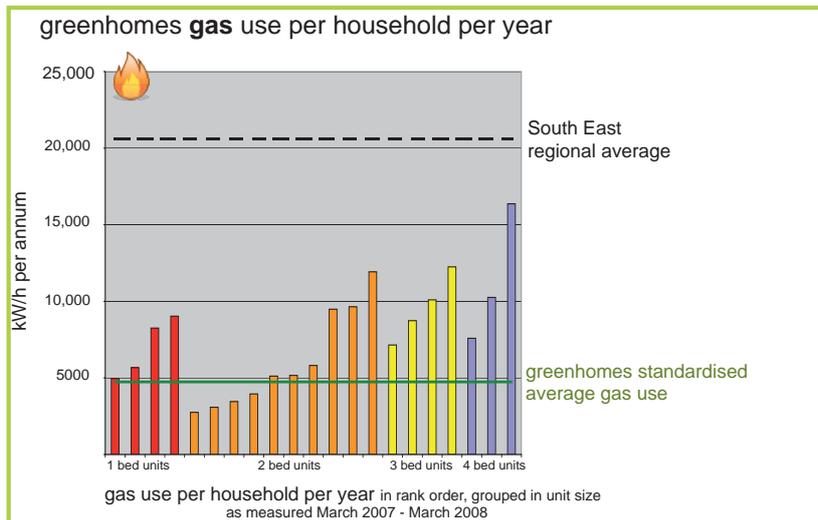
- Ecological planting scheme to communal areas
- Brownfield site

## Surface water

- Sustainable Urban Drainage System (SUDS)

Greenoak won an Innovation and Good Practice Grant from the Housing Corporation to assess the actual performance of the greenhomes and to help identify barriers to mainstreaming this model and approach. This research has shown that on average, gas use is around one fifth of the average South East home. Water use is reduced by around one third of the regional average, without any water recycling. Even electricity, which is more dependant on resident lifestyle, is around half of the national average.

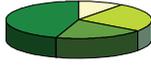
Resident satisfaction levels overall are extremely high. This combined with the actual energy and water savings achieved shows that the greenhomes passive features are working effectively without any specific resident input. The wide distribution of energy and water use indicates the potential for further savings through addressing behaviour change.

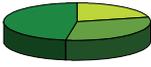
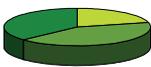


The full project report is now available, if you would like a copy please email;

[publications@greenoakha.org](mailto:publications@greenoakha.org)

## Sample of findings from Greenoak's IGP research

Environmental Features						
Resident satisfaction levels						
		very high	high	satisfactory	low	very low
	Satisfaction level	Satisfactory or higher	Less than satisfied	Residents comments		
Draught free		95%	5%	<p><i>'..air is much cleaner and fresher..'</i></p> <p><i>"before I moved in I thought I should buy a draught excluder, I'm glad didn't!"</i></p>		
Natural light		100%	0%	<p><i>'..seeing the sun in winter...it lifts you, you know...'</i></p> <p><i>"light and airy"</i></p>		
Artificial lighting		90%	10%	<p><i>"They're fine, but I don't have to use them much!"</i></p>		
Internal temperature in winter		90%	10%	<p><i>"warm... I could grow tomatoes in here!"</i></p> <p><i>"...I can't remember the last time we put the heating on"</i></p> <p>Some residents are disappointed at having to use the heating at all and so expressed their satisfaction as low.</p>		

Design and Layout					
Resident satisfaction levels					
		Satisfactory or higher	Less than satisfied	Residents' Comments	
Room size		100%	0%	<p><i>"...space for kids to play...they can have friends round..."</i></p> <p><i>"it's so spacious"</i></p>	
House layout		100%	0%	<p><i>"The house is well thought through ..It's good to have somewhere to dump your shoes and coats [entrance lobby], they don't usually think about things like that!"</i></p>	
Living space		100%	0%	<p><i>"they have the Tardis effect – they don't look that big from the outside but everyone who comes in is like 'wow what a huge lounge'."</i></p>	

Health & Wellbeing					
Resident satisfaction levels					
		Satisfactory or higher	Less than satisfied	Residents comments	
Happiness		100%	0%	<p><i>"It feels good to come home now"</i></p>	
Safety and security		95%	5%	<p><i>"I feel very safe here"</i></p>	
Pride in where you live		100%	0%	<p><i>"People can see these places are high quality, that makes you feel good"</i></p>	
Allergy improvements		100%	0%	<p><i>"The air seems fresher in here, my kids have had less hay fever"</i></p>	
Health improvements		93%	7%	<p><i>'Before I moved in here I would get a cold every month, since I've moved in here I've had maybe 2 or 3 colds in 2 years.'</i></p> <p><i>'it's good that the house can be adapted in the future...for my son...'</i></p>	



Greenoak has won the Gold Award from the Housing Corporation for the organisation's approach to sustainability.

